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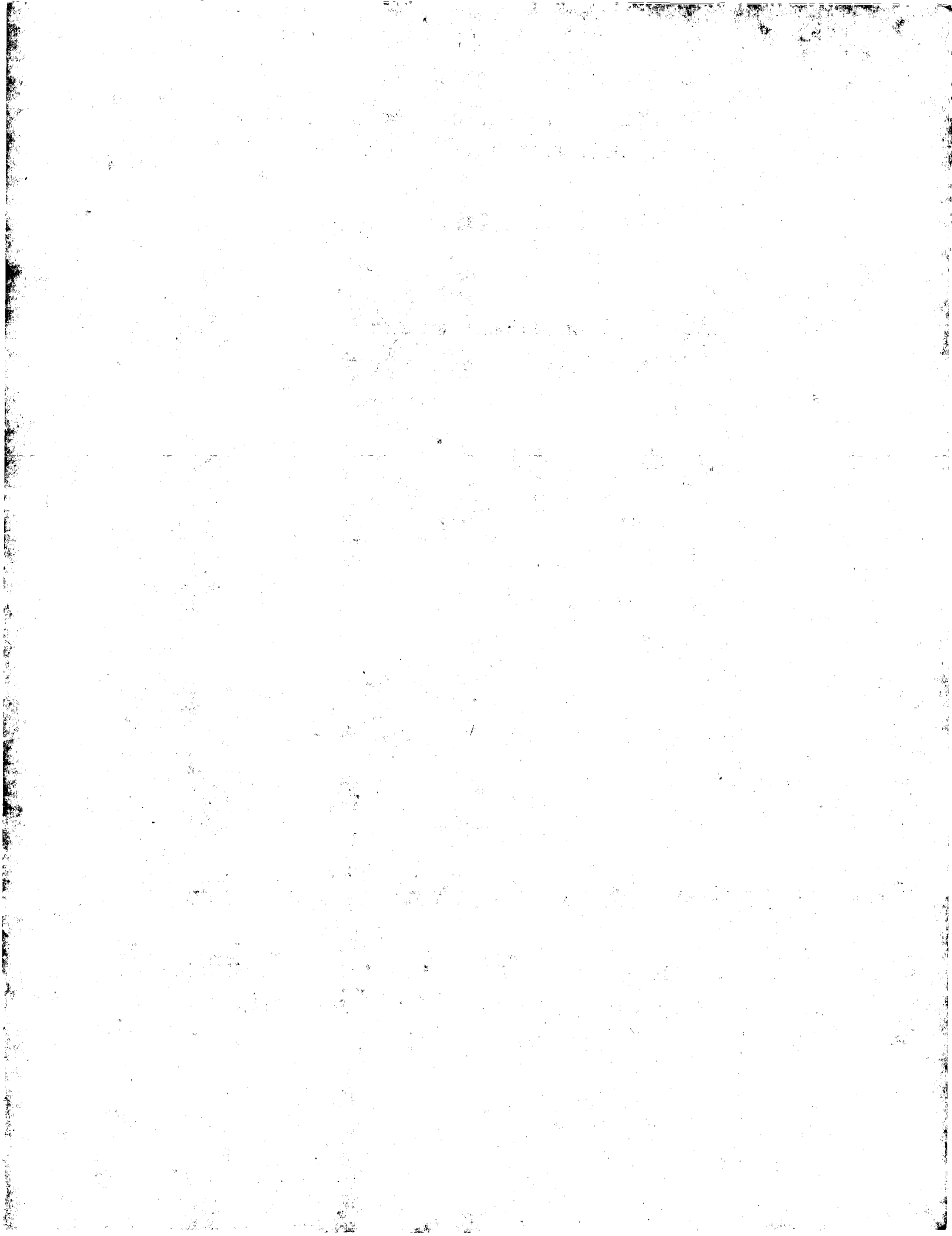
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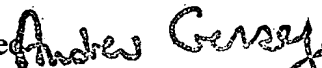
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17 OCT 2002

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P0177700 0.00-0224178.4

The Patent Office

Cardiff Road
Newport
South Wales
NP9 1RH

1. Your reference

WMO/AMW/P200383

2. Patent application number
(The Patent Office will fill in this part)

0224178.4

17 OCT 2002

3. Full name, address and postcode of the or of
each applicant (underline all surnames)DAVID MICHEL
C/O GREENSWARD ENGINEERING CO
MANOR FARM
OTLEY ROAD, ADEL, LEEDS
LS16 7AL, UNITED KINGDOM

Patents ADP number (if you know it)

7989833001

If the applicant is a corporate body, give the
country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

GRASS BRUSH APPARATUS

5. Name of your agent (if you have one)

URQUHART-DYKES & LORD

"Address for service" in the United Kingdom
to which all correspondence should be sent
(Including the postcode)TOWER HOUSE
MERRION WAY
LEEDS
LS2 8PA
UK

Patents ADP number (if you know it)

1644004

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earlier patent applications, give the country
and the date of filing of the or of each of these
earlier applications and (if you know it) the or
each application number

Country

Priority application number
(if you know it)Date of filing
(day / month / year)7. If this application is divided or otherwise
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give the number and the filing date of
the earlier application

Number of earlier application

Date of filing
(day / month / year)8. Is a statement of inventorship and of right
to grant of a patent required in support of
this request? (Answer 'Yes' if)

YES

- a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an
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THE PATENT OFFICE A 17 OCT 2002 RECEIVED BY FAX	Description	3
	Claim(s)	
	Abstract	
	Drawing(s)	1

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Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

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Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date

12. Name and daytime telephone number of person to contact in the United Kingdom

WILLIAM ORR - 0113 2452388

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Patents Form 1/77

-1-

GRASS BRUSH APPARATUS

This invention relates to a grass brush apparatus which has a frame, a set of brushes mounted on the frame, and a wheel set mounted on the frame and adjustable between a ground-engaging position suitable for wheeled transport of the apparatus, and a raised position in which the set of brushes is engageable with the ground to brush the surface thereof.

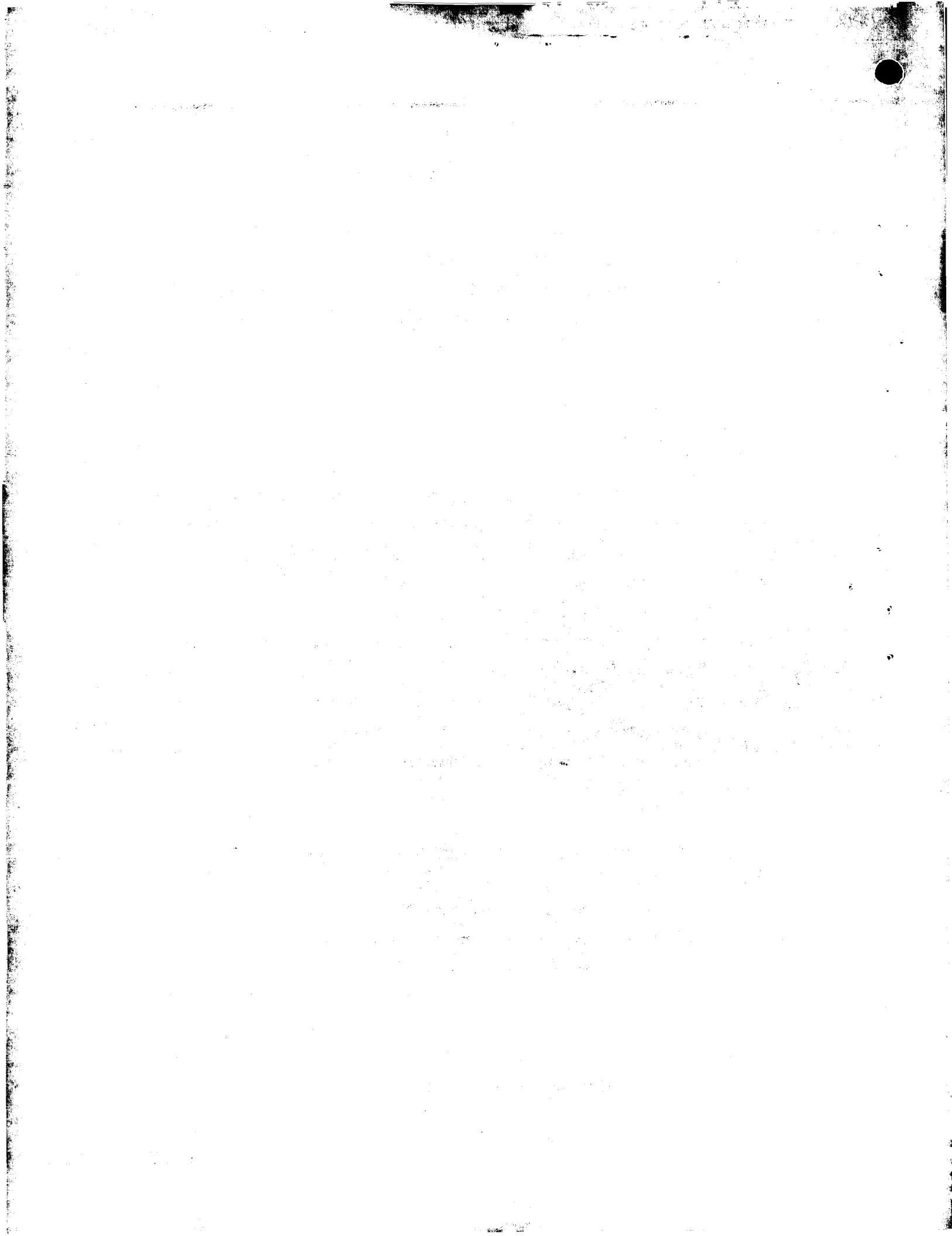
One example of such apparatus is disclosed in more detail in US patent 5833013, to which attention is drawn.

The present invention develops apparatus of this known type, and provides in addition a pair of wing frames each connected to an adjacent side of a central or main frame and carrying its own set of brushes. Each wing frame is capable of being folded between an operative position in which its brush set engages the ground and a raised transport position providing a reduced overall width of the apparatus. In the operative position of the main frame and the wing frames, a supporting wheel set is adjusted to a raised position with respect to the frames.

The present invention has been developed primarily with a view to automate the folding and unfolding of the wing frames, simultaneously with adjustment of the supporting wheel set.

According to the invention, there is provided a grass brush arrangement which comprises:

- a main or central frame carrying one set of brushes;
- a pair of wing frames each connected to an adjacent side of the main frame and carrying its own set of brushes;
- means mounting each wing frame on the main frame for folding movement between an operative position and a raised transport position of reduced overall width of the apparatus;
- a supporting wheel set arranged to support the main frame;



-2-

means adjustably mounting the wheel set on the main frame for movement between a ground engaging transport position of the apparatus, and a raised operative position in which the brush sets can carry out brushing operations on the ground; and drive means operative to adjust the wheel set at the same time as the wing frames are adjusted.

Preferably, a single drive means provide simultaneous adjustment of the wheel set and of the wing frames.

In a preferred arrangement, a mechanism may be provided that utilises an electrically operated actuator ram and which, by acting through a series of cables and pullies, enables the wing frames to be folded at the same time as the wheel set is lowered. Thus, the assembly becomes ready for moving from one area on site to another, without the driver of a propelling vehicle having to leave his seat.

Therefore, a grass brush apparatus according to a preferred embodiment of the invention can carry out maintenance of golf greens, in which it is desirable to brush the surface of the greens for such reasons as the brushing-in of a sand top dressing, or the dispersion of dew, or to stand the grass up before mowing to facilitate an even cut.

As it is highly desirable to avoid disruption of play, it is desirable to produce as wide a brushing action as possible, within the limits of practical manoeuvrability.

The invention, therefore, is an improvement on existing brush apparatus, adding a pair of folding, preferably pivoted "wing brushes", which can move separately of the main central brush section, thus enabling them to conform to the contour of the surface, and to fold upwards and inwards to reduce the overall width or transport.

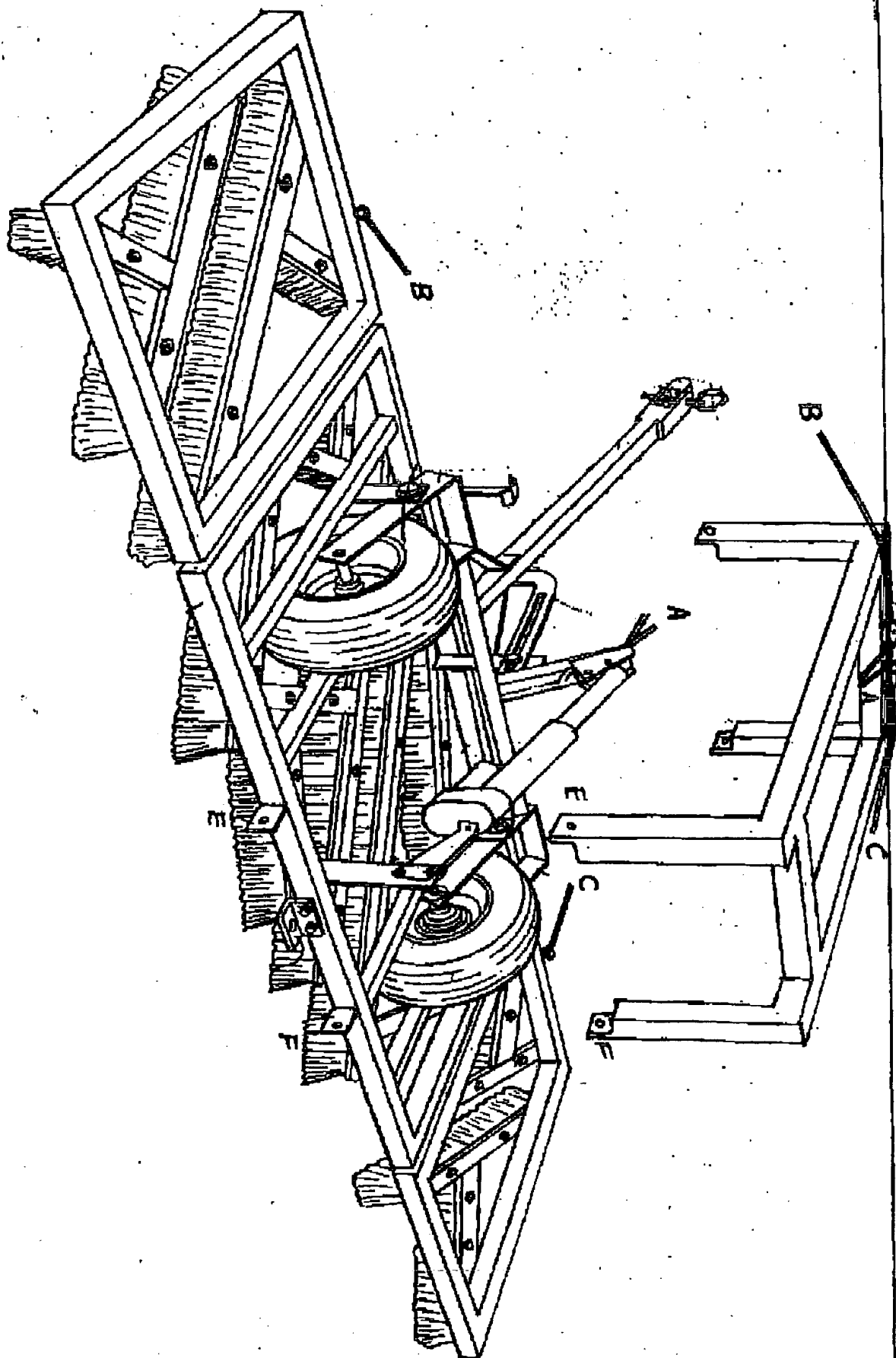
By means of the invention, forwards and backwards action of an actuator (which lowers the transport wheels into their operating position) is converted into a lateral lifting force to raise the wing brush frames into a transport position at the same time as the transport wheels are lowered.

-3-

While it is preferred that a single drive means provides the power to adjust all of the components, it is within the scope of the invention to provide two or more separate electric or hydraulic actuators.

A preferred embodiment of the invention is shown in the accompanying drawing. It comprises a main section having its own set of brush units, and two wing framed sections, each foldable upwardly to a raised position, from the operative position shown, by application of a pulling force along lines of action B and C.

There is also shown a lowerable transport wheel set, controlled to adjust between raised and lowered positions under the action of a hydraulic actuator or the like.



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